

Manifold Absolute Pressure (MAP) Sensor Inspection

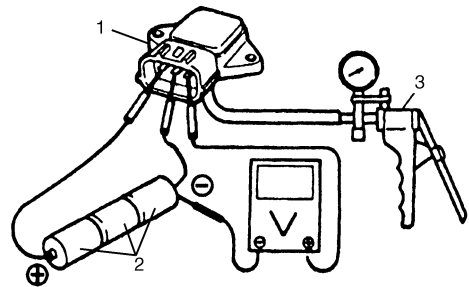
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- 1) Disconnect connector from MAP sensor.
 - 2) Remove MAP sensor.
 - 3) Arrange 3 new 1.5 V batteries (2) in series (check that total voltage is 4.5 – 5.0 V) and connect its positive terminal to “Vin” terminal of sensor and negative terminal to “Ground” terminal. Then check voltage between “Vout” and “Ground”.
- Also, check if voltage reduces when vacuum is applied up to 400 mmHg by using vacuum pump (3).
If check result is not satisfactory, replace MAP sensor (1).

Output voltage (When input voltage is 4.5 – 5.5 V, ambient temp. 20 – 30 °C, 68 – 86 °F)

Altitude (Reference)		Barometric pressure		Output voltage
(ft)	(m)	(mmHg)	(kPa)	(V)
0 – 2000	0 – 610	760 – 707	100 – 94	3.3 – 4.3
2001 – 5000	611 – 1524	Under 707 over 634	94 – 85	3.0 – 4.1
5001 – 8000	1525 – 2438	Under 634 over 567	85 – 76	2.7 – 3.7
8001 – 10000	2439 – 3048	Under 567 over 526	76 – 70	2.5 – 3.3

- 4) Install MAP sensor (1) securely.
- 5) Connect MAP sensor (1) connector securely.



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Throttle Position (TP) Sensor On-Vehicle Inspection

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- 1) Disconnect negative cable at battery and connector from IAT sensor.
- 2) Remove air cleaner assembly with air cleaner outlet hose and disconnect TP sensor connector.
- 3) Using ohmmeter, check resistance between terminals under each condition given in table below.
If check result is not satisfactory, replace TP sensor.

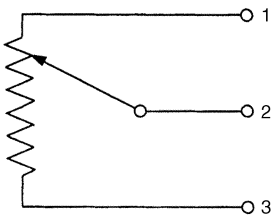
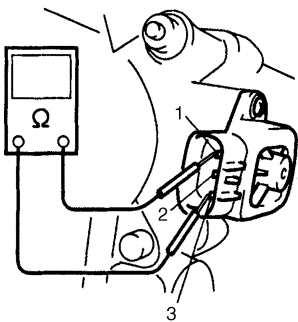
TP sensor resistance

Between terminals “1” and “3”: 4.0 – 6.0 kΩ
Between terminals “2” and “3”: 20 Ω – 6.0 kΩ,
varying according to throttle valve opening.

NOTE:

There should be more than 2 kΩ resistance difference between when throttle valve is at idle position and when it is fully open.

- 4) Connect TP sensor connector securely.
- 5) Connect negative cable to battery.



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1. Reference voltage terminal
2. Output voltage terminal
3. Ground terminal

Throttle Position (TP) Sensor Removal and Installation

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Removal

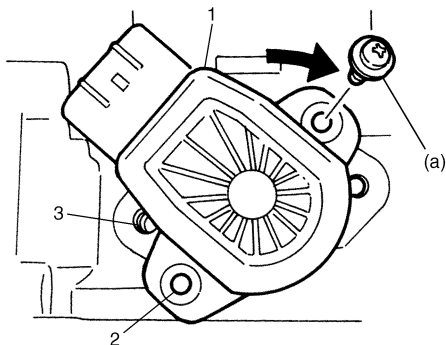
- 1) Disconnect battery negative cable at battery.
- 2) Remove throttle body from intake manifold referring to "Throttle Body Removal and Installation: in Section 1D".
- 3) Remove TP sensor from throttle body.

Installation

- 1) Install TP sensor (1) to throttle body.
Fit TP sensor to throttle body in such way that its holes (3) are a little away from TP sensor screw holes (2) as shown in the figure and turn TP sensor clockwise so that those holes align.

Tightening torque

TP sensor screw (a): 2.5 N·m (0.25 kg-m, 1.8 lb-ft)



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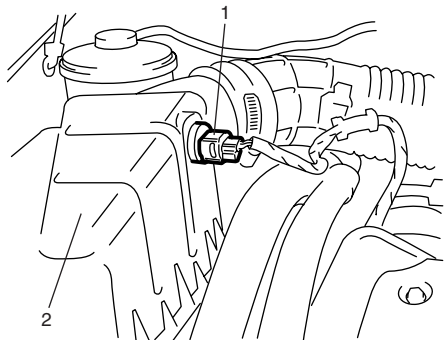
- 2) Connect connector to TP sensor securely.
- 3) Connect battery negative cable to battery.

Intake Air Temperature (IAT) Sensor Removal and Installation

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Removal

- 1) Disconnect negative cable from battery.
- 2) Disconnect IAT sensor coupler (1).
- 3) Remove IAT sensor from air cleaner case (2).

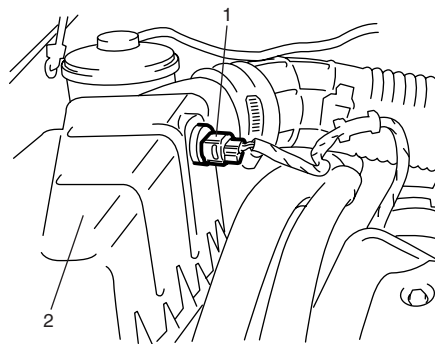


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Installation

Reverse removal procedure noting the following.

- Clean mating surface of IAT sensor and air cleaner case (2).
- Connect IAT sensor connector (1) securely.



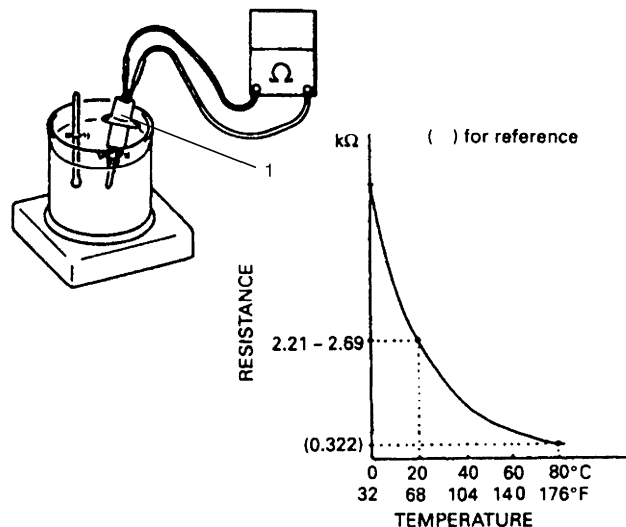
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Intake Air Temperature (IAT) Sensor Inspection

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Immerse temperature sensing part of IAT sensor (1) in water (or ice) and measure resistance between sensor terminals while heating water gradually.

If measured resistance doesn't show such characteristic as shown in the figure, replace IAT sensor.



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Engine Coolant Temperature (ECT) Sensor Removal and Installation

S3RH0A1306014

Removal

- 1) Disconnect negative cable from battery.
- 2) Drain coolant referring to "Cooling System Flush and Refill: in Section 1F".

WARNING:

To help avoid danger of being burned, do not remove radiator cap while engine and radiator are still hot.

Scalding fluid and steam can be blown out under pressure if cap is taken off too soon.

- 3) Remove air intake pipe.